

CHAPTER 3

AFFECTED ENVIRONMENT

This chapter summarizes the existing environmental conditions at the Western New York Nuclear Service Center and the surrounding area. Drawing upon information generated for WVDP environmental programs, the 1996 Draft Closure EIS, and Annual Site Environmental Reports, this chapter characterizes the receptors and environmental media that may be affected by the proposed waste management activities described in Chapter 2. This chapter also characterizes, in less detail, the ecological resources, geology, socioeconomics, land use, and related aspects of the environment at the Western New York Nuclear Service Center that would not be affected by the actions described in Chapter 2. This approach is consistent with the Council on Environmental Quality's recommendations in their regulations for NEPA implementation (40 CFR 1502.15). For additional detailed descriptions of the affected environment, refer to the *West Valley Demonstration Project Safety Analysis Report - Project Overview and General Information* (WVNS 2000b) and the *West Valley Demonstration Project Site Environmental Report, Calendar Year 2000* (WVNS 2001).

The waste management actions proposed in Chapter 2 would have very little potential for impacts to workers, the public, or the environment on and around WVDP, because the actions would not involve additional discharges or releases, or new ground disturbance. The proposed actions would occur within existing buildings, or upon existing highways and rail lines. The packaging and handling of wastes for shipment would be accomplished within existing buildings with HEPA filtration systems that would reduce emissions to acceptable levels. The actions proposed in this EIS would involve no discharges of process effluents. The only receptors that would be impacted by the proposed waste management actions would be the workers actually involved in the packaging, loading, and shipping of the wastes, also referred to as involved workers. Other WVDP workers (noninvolved workers) and the public would have no potential exposure to the proposed waste management actions during routine operations and thus would be impacted only by ongoing WVDP operations or under accident scenarios. Nationally, the involved workers and the public could receive exposures along transportation routes.

Because the potential for impacts from the proposed actions assessed in this EIS is very limited, the description of the affected environment in this chapter has been reduced accordingly. This approach is consistent with DOE and Council on Environmental Quality NEPA guidance; both agencies recommend that an EIS focus only on that which is important for the impact analyses. A basic description of the region in which the Center is located has been provided to provide the reader with a broad overview of the potentially affected environment.

3.1 GEOLOGY AND SOILS

The Western New York Nuclear Service Center is located on the Glaciated Allegheny Plateau section of the Appalachian Plateau Physiographic Province. This 78,000-square-kilometer (30,000-square-mile) region is bounded on the north by the Erie-Ontario Lowlands, on the east by the Tughill Upland, on the south by the unglaciated Appalachian Plateau, and on the west by the Interior Lowlands. The Glaciated Allegheny Plateau has been subjected to the erosional and depositional actions of repeated glaciations, resulting in the accumulation of various glacial deposits over the area. Fluvial erosion (that is, erosion resulting from action or movement of a stream or river) and mass wasting (that is, the downslope movement of soil and rock material as the result of gravity) currently are altering the glacial landscape (WVNS 2000b). No geologic fold or fault of any consequence is recognized within the site area. The closest major structural zone is the St. Lawrence Rift Valley System, located about 480 kilometers (300 miles) to the northeast. The north-trending Clarendon-Linden Structure, located 50 kilometers

(30 miles) northeast of the site, is the only significant structural feature in the western New York region. From 1737 to 1999, there have been 119 recorded earthquakes within 480 kilometers (300 miles) of the WVDP with epicentral intensities of Modified Mercalli Intensities V to VII. Of the 119 recorded earthquakes, 25 occurred within 320 kilometers (200 miles) of the WVDP (WVNS 2000b). The highest Modified Mercalli Intensity estimated to have occurred at the Center within the last 100 years was an Intensity of IV, which is similar to vibrations from a heavy truck that might be felt by people indoors, but do not cause damage (DOE 1996).

3.2 HYDROLOGY

This section describes the existing hydrology at the Project Premises and surrounding area.

3.2.1 Surface Water

The WVDP facilities and its two water supply reservoirs lie in separate watersheds, both of which are drained by Buttermilk Creek (Figure 3-1). Buttermilk Creek, which roughly bisects the Western New York Nuclear Service Center, flows in a northwestward direction to its confluence with Cattaraugus Creek, at the northwest end of the Center. Several tributary streams flow into Buttermilk Creek at the Center. The flow length of Buttermilk Creek through the Center is about 7,600 meters (25,000 feet). About 2,700 meters (9,000 feet) of this is adjacent to the Project Facilities and the water supply reservoirs (WVNS 2000b).

Buttermilk Creek lies in a deep, narrow valley cut into glacial soils. A downstream portion of the creek has downcut to shale bedrock. The reach of stream to the east of the facilities has downcut through the Lavery till and the underlying Kent recessional units and is currently incising the Kent till. The stream invert drops from an elevation of 400 meters (1,300 feet) at the southern site boundary, to 370 meters (1,200 feet) at the northern edge of the Project Facilities, to 340 meters (1,100 feet) at the confluence with Cattaraugus Creek. The drainage area of the Buttermilk Creek basin was estimated to be 80 square kilometers (30 square miles) (DOE 1996). The drainage area to this point is estimated to be about 76 square kilometers (29 square miles) (WVNS 2000b).

Cattaraugus Creek flows westward from the Buttermilk Creek confluence to Lake Erie, 63 kilometers (39 miles) downstream. The total drainage area is estimated to be 1,360 square kilometers (520 square miles). A gauging station has been maintained at Gowanda, New York, since 1939. The drainage basin to this point is estimated to be about 1,120 square kilometers (430 square miles). The drainage area of Cattaraugus Creek upstream of the Buttermilk Creek confluence is 560 square kilometers (220 square miles) (WVNS 2000b).

The drainage basin on the Project Premises is relatively small, consisting of approximately 5 square kilometers (2 square miles). The outfall of the watershed (that is, the point where all surface runoff from the site reaches a single stream channel) is at the confluence of Frank's Creek and Quarry Creek, north of the main Project Facilities. The watershed extends in a southwest direction from this point. Ground cover consists of the main Project Facilities, forest, abandoned farmlands, and a small amount of active farmland.

The watershed on the Project Premises is drained by three named streams: Quarry Creek, Frank's Creek, and Erdman Brook (Figure 3-2; WVNS 2000a). Erdman Brook and Quarry Creek are tributaries to Frank's Creek, which in turn flows into Buttermilk Creek. Erdman Brook, the smallest of the three streams, drains the central and largest fraction of the developed WVDP premises, including a large portion of the disposal areas and the areas surrounding the lagoon system; the plant, office, and warehouse areas; and a major part of the parking lots. Following treatment, the WVDP's waste waters